Experimental and Theoretical Probability – Dice Sums
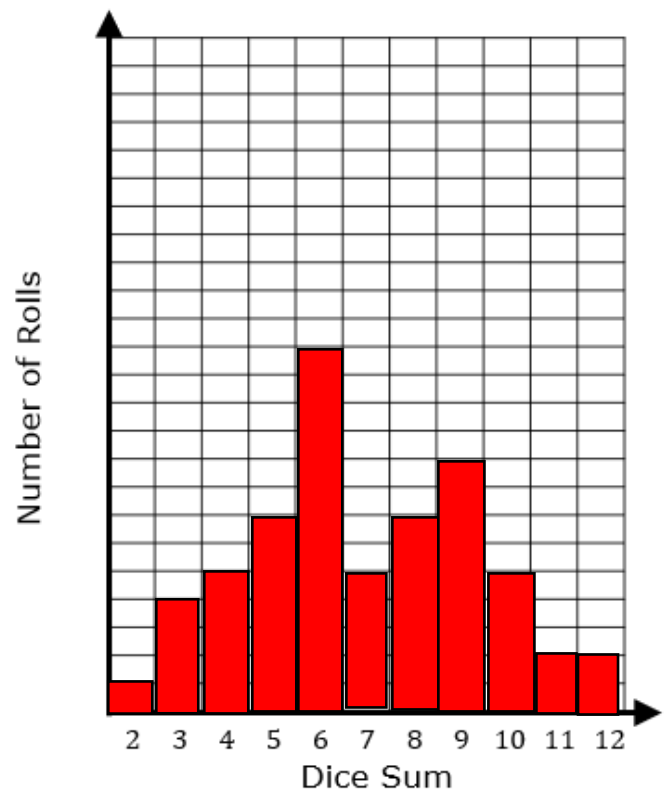
(a)

Roll two dice. Add together the two numbers shown. Repeat the experiment 60 times, tallying and totalling the results.

Example data:

Dice Sum	Tally	Total
2	I	1
3	IIII	4
4	IIIII	5
5	IIIIIII	7
6	IIIIIIIIIIIII	13
7	IIIII	5
8	IIIIIII	7
9	IIIIIIIII	9
10	IIIII	5
11	II	2
12	II	2

(b)

Show your information as a graph.

(c)

Complete the sample space to show all possible dice sums.

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

(d)

Calculate the experimental and theoretical probabilities for different outcomes. Give your answers to 3 decimal places.

Outcome	Experimental Probability	Theoretical Probability
12	0.033	0.028
7	0.083	0.167
10	0.083	0.083
5	0.116	0.111
3 or 4	0.150	0.139
More than 8	0.300	0.278

(e)

Compare the experimental and theoretical probabilities. What do you notice?

e.g. in most cases the experimental probabilities are similar to the theoretical probabilities